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FIG. 7. *Kleinia articulata* (L.f.) Haw. Flowering plant in coll. of Mrs. Davidson, San Francisco. App. x 2.

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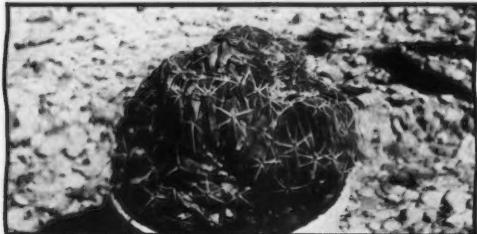
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A Cristate *Homalocephala texensis*

By R. C. BOGUSCH, San Antonio, Texas

In my collection of cacti there is a cristate form of *Homalocephala*, whose large size and curious contortions are sufficiently unusual to attract the attention of a number of cactus fanciers that have seen the plant. Because of its rareness and due to the fact that no mention of such a form occurs in the CACTACEAE by Britton and Rose, I feel the plant merits being brought to the columns of our CACTUS JOURNAL.

This specimen was found growing on an exposed hillside in Mason County, located in Central Texas, and was thriving in a red sandy clay soil. From the size of the plant, it is assumed to be of considerable age, for the members of this species are of slow growth. The plant is evidently quite healthy and is still vigorously producing new growth.

The individual in my collection is between twelve and thirteen inches across the top at the widest place. The average height is around eight inches, and the circumference measures thirty-eight inches. From the base up, across the top, and down the opposite side the distance is twenty-one inches.

The color and arrangement of the spines are that of the true *Homalocephala texensis*. Inserted between the normal prominent ribs are numerous acute spineless ribs, varying in length from $\frac{1}{4}$ to 4 inches, and from $\frac{1}{8}$ to 1 inch wide. The general pattern assumed by the prominent spine-bearing ribs is a varying mosaic of tortuous spirals, interrupted ellipses, and figure 8's. Their analysis into a definite scheme is difficult of description.

In color, the matured growth is a variegated pale green, which stands in contrast to the darker color of the new growth and the spineless ribs. The cause of the variegations is obscure and may be due to physiological conditions, for under the more moderate conditions of greenhouse culture, a deepening of color has been observed.

In the description of the species, Britton and Rose in their monograph mention no cristate specimens*, which, naturally, makes the specimen very much prized as an addition to my collection.

EDITOR'S NOTE: Britton & Rose do not mention crests in any species as a rule, because they may and often do occur in any species of cactus whatever, being teratological formations rather than true botanical varieties.

Kleinia

By ERIC WALTHER

Any enquiring observer contemplating the genus *Kleinia* is bound to be struck with what is easily its most interesting aspect, that is, the extent to which a number of its species simulate other plants of the same nativity. *Kleinia repens*, for instance, when not in flower, might readily be mistaken for *Mesembrianthemum*.

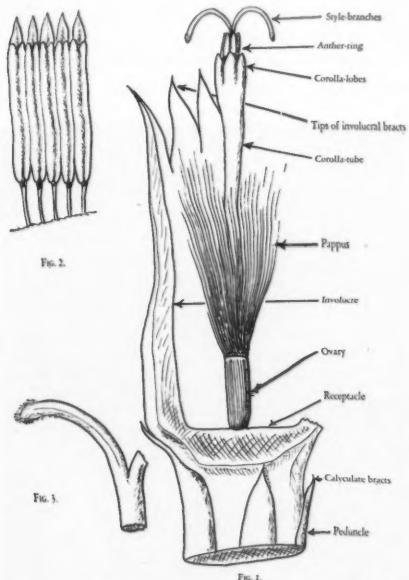


FIG. 1. Schematic sketch of dissected flower-head of *Kleinia anteuphorbium* (L.) DC. app. x. 3. (Only a single floret is shown.)

FIG. 2. Anther-ring opened out. app. x 6.

FIG. 3. Single style-branch with conic tip. app. x 6.

verruculatum Thunbg., while the specific name of *Kl. stapheliaeformis* finds full justification in the remarkable similarity of this to many *Stapeliads*.

In spite of this superficial resemblance it is a far cry indeed, phylogenetically, from say, *Mesembrianthemum* to *Kleinia*. This case may be taken as a most apt illustration of the axiom that external resemblance by no means implies actual relationship and community of descent. As a matter of fact, in floral structure *Kleinia*

is quite different from all other Succulents except the closely allied genera *Othonna* and *Senecio*. In common with these it belongs to the *Compositae*, or daisy-family, which last is by most systematists placed with the highest and most lately evolved families of flowering plants. They were led to this decision by consideration of the floral structure, which we shall attempt to explain with the assistance of the appended diagrammatic sketch.

What most laymen would take for the flower, in *Kleinia*, and the *Compositae* in general, is really a mass of individual flowers collected into a composite head, whence the name "Com-



FIG. 4. *Kleinia nerifolia* Haw. Reproduced from: *Dillenius Hortus Elthamensis*, published in 1732. app. x. 5.

positae." Taking one of these heads and dissecting it carefully we find first an outer envelope of usually green, leaflike organs, protective in function, just as the calyx in other flowers, but of quite different derivation in this case, and constituting the involucle. Within these involucral bracts are crowded a variable

hairlike bristles attached to the top of the ovary, called "pappus", and well known to everybody from the familiar Dandelion, Thistles, etc., where they serve as a means of dissemination, the seeds being often carried long distances by the wind, all due to the parachute-effect of this pappus.

Within the corolla are found the stamens, 5 in number, and peculiar in that the anthers are united into a ring around the style. This, taken with the aggregation of the flowers into heads, is the most characteristic feature of the Daisy-family. From within this anther-ring the style gradually becomes extruded, its two style-branches ultimately much recurving in *Kleinia*, and ending in a usually somewhat conical stigmatic tip.



FIG. 5. *Kleinia tomentosa* Haw. Sterile shoot of plant in coll. of Mr. Beecroft, Escondido. App. x.7.

number of separate flowers, technically called "florets", borne on the expanded top of the peduncle or stalk, this being termed the "receptacle." In the individual floret we may distinguish the basal ovary, which bears the corolla proper at its apex, and is hence known as an inferior ovary. This ripens into a one-seeded, dry, indehiscent fruit, technically known as an "achene", as illustrated by the familiar sunflower, etc. The corolla proper consists of the corolla-tube, divided above into 5 lobes equivalent to the petals of other flowers. In *Kleinia* these lobes are alike in all florets, but in many other *Compositae* the outer or ray-florets have one of these corolla-lobes greatly enlarged, into what is known as a ligule or ray, the latter often mistakenly called "petal" by the uninitiated. Of the true calyx commonly present in other flowers nothing remains here but a cluster of



FIG. 6. *Kleinia odora* (Forsk.) DC. Flowering branch in coll. of E. O. Orpet, App. x.5.

This preamble may make it easier to follow our attempted exposition of the generic status of *Kleinia*. The genus is really most closely related to *Senecio*, a very large genus, of cosmo-

politan distribution, containing many common weeds, as well as such well known flowers as Cineraria, Dusty Miller, German Ivy, California Geranium, etc., which last is neither a Geranium nor Californian. Even though many authorities are inclined to unite these two genera, as Succulent-fanciers we may feel justified to search for grounds to keep *Kleinia* distinct, for which view also much may be said. The genus *Kleinia* was first established by Linnaeus for the species which Berger, in his "Stapeliens & Kleinien", grouped into *Eukleinia*. W. H. Harvey, in the "Flora Capensis", Vol. III; 315; maintains the genus as valid, distinguishing it as shown below. In their "Genera Plantarum" (1862-1883), Bentham and Hooker sink *Kleinia* into *Senecio*, but under the plate of *Kl. pendula*, Botanical Magazine 7659, J. D.



FIG. 8. *Kleinia repens* (L.) Haw. Note the abnormal flower-heads. Plant in Orpet's coll. App. x.1.

Hooker says: "No absolute distinction (between *Kleinia* and *Senecio*) is possible, but *Kleinia* forms a fairly circumscribed group, distinguished by a succulent habit, cylindric, ecalyculate involucre, long, narrow, uniseriate bracts and homogamous discoid flowers, the outer of which have small conical appendices to the style-arms."

Notonia, a group typified by *Kl. fulgens*,

which DeCandolle tried to separate, on apparently insufficient grounds, is practically identical with *Kleinia*.

It must be confessed that, to someone not a specialist in the taxonomy of the *Compositae*, the shape of these style-tips is a character diffi-



FIG. 9. *Kleinia chordifolia* Hook. f. Flowering plant in Orpet's collection. App. x.1.

cult of observation, and furthermore is of concededly slight systematic value. Nevertheless we may well follow Berger in keeping up *Kleinia*, leaving final decision, if such be possible, to future, more expert and more leisurely investigation.

As for succulency, this is also found in *Senecio* proper, for instance in *S. crassissimus* (*1), and a whole series of South African species, most of the latter grouped by Harvey, I.c., into the Series *Kleinoides*; of this group *S. scaposus* has recently been introduced here.

Before proceeding to a detailed treatment of the species grown here a brief summary of the technical characters and status of the genus *Kleinia* may be in order, with a key to our species. This key of necessity follows Alwin Berger's very closely; and due acknowledgment is hereby given. The other sources are indicated above.

(*1: See "Cactus Journal", Vol. 11:4, page 333; 1930.

Family Compositae: Flowers crowded into heads, surrounded by an involucre of bracts; florets with an inferior ovary, maturing into a dry, indehiscent fruit termed an achene; calyx modified into often threadlike pappus; corolla tubular, usually 5-fid; of outer florets often unequally enlarged into the mostly showy rays; stamens commonly 5, with the anthers connate into a ring around the style; style usually 2-branched.

Key to the succulent genera of Compositae: (2) (From Harvey, 1.c.)

- A. Outer florets ligulate, with prominent rays.
- B. Disk-florets perfect, with both stamens and pistil..... *Senecio*
- B. Disk-florets sterile, stamine..... *Othonna*
- AA. Heads discoid, all florets alike, rayless.
- B. Marginal florets pistillate only, disk-florets fertile, perfect..... *Kleinia*
- B. All florets fertile or perfect.
- C. Style-branches of disk-florets truncate..... *Senecio*
- C. Style-branches of disk-florets minutely cone-tipped..... *Kleinia*

Key to the species of *Kleinia* grown here: (After Berger)

- 1a. Lvs. always present, thick, terete or nearly so, acutish, with resinous sap; heads small to medium-sized; fls. usually whitish, rarely yellow, usually all florets perfect. (*EUKLEINIA* Berger.)..... 3
- b. Lvs. not always persistent, often deciduous, or none, always flat and thin..... 2
- 2a. Plants shrubby, with distinctly jointed branches and stem; lvs. deciduous, conspicuous stripes running down the joints from the leaf-scars; fls. usually whitish, rarely red or purple, nearly always all florets perfect..... (*ANTEUPHORBIUM* Berger)..... 11
- b. Plants herbaceous or subshrubby, with swollen rootstock, and unsegmented stem and branches; lvs. persistent, large and flat; heads large, colored; outer florets pistillate. (*NOTONIA* DC.)..... 9
- 3a. (1a) Leaves, etc. densely white-downy; heads solitary, yellow, short-stalked. (See photo No. 5.) Cape. (B.M. 6063) (Syn. *Kl. haworthii* (DC.))..... *KL. TOMENTOSA* Haw.
- b. Plants smooth, not downy..... 4
- 4a. Stems threadlike, elongated, trailing and rooting; lvs. 2 to 3 cm. long, often nearly as thick. Cape. (Syn. *Senecio crassipes* Hort.)..... *KL. RADICANS* (L.f.)
- b. Stems stout, erect or ascending..... 5
- 5a. Lvs. compressed laterally, acute, very glaucous. Cape. (DC. Pl. Gr. 90.) *KL. FICOIDES* (L.) Haw.
- b. Lvs. flattened or furrowed above..... 6
- c. Lvs. quite terete, cylindrical in cross-section. Cape. (*K. aizoides* Hort. not DC.) Berger. *KL. CYLINDRICA*.
- 6a. Lvs. 10 to 25 cm. long, subulate or awl-shaped, dark green, scarcely glaucous..... 7
- b. Lvs. shorter, 6 to 10 cm. long, grey-green, very glaucous..... 8
- 7a. Stem short or none, at most 5 to 7 cm. tall; lvs. 10 to 16 cm. long. Cape. *KL. ACAULIS* (L.f.) DC.
- b. Stem to 30 cm. tall; lvs. to 25 cm. long. (see photo No. 9.) Cape. (B.M. 6216) *KL. CHORDIFOLIA*
- 8a. (6b) Lvs. bluntly pointed, 6 to 8 cm. long; scape short, few-flowered, our commonly grown form with abnormal inflorescence (see photo No. 8.) Cape. (DC. Pl. Gr. 42) *KL. REPENS* (L.) Haw.
- c. Lvs. sharply pointed, 9 to 10 cm. long; scapes taller, with numerous normal flower-heads. Cape ?; adventive in Mediterranean Region..... *KL. MANDRALISCAE* Tineo.
- 9a. (2b) Lvs. with 2 or 3 short marginal teeth; fls. red. Natal. (B.M. 5590) *KL. FULGENS* Hook. f.
- b. Lvs. without any teeth, entire..... 10
- 10a. Flower-heads nodding, yellow; scape to 80 cm. tall; stem to 40 cm. tall and 2 cm. thick. East. Africa *KL. AMANIENSIS* (Engl.) Berg.
- b. Heads usually more or less erect, red; scape shorter, stem smaller. East Africa. (B.M. 7691)*³
- 11a. (2a) Lvs. deeply cut or pinnatifid; joints decumbent; scape long and slender, with many small heads of white, ill-scented flowers. (see photo No. 7.) Cape. (DC. Pl. Gr. 18.)..... *KL. ARTICULATA* (L.f.) Haw.
- b. Lvs. entire, margins not cut, plants other than above..... 12
- 12a. Flowers whitish or yellowish..... 13
- b. Flowers bright orange or reddish..... 15
- 13a. Heads with 5 to 10 florets each; large shrub with lvs. 9 to 10 cm. long, linear-lanceolate, in definite terminal tufts. Canary Islands. (Dill. Hort Elth. 54, see fig. 4)..... *KL. NERIFOLIA* Haw.
- b. Florets 13 to 40 to each head; lvs. usually scattered..... 14
- 14a. Inflorescence of 1 to 3 heads, each with 30 to 40 florets; lvs. 1.5 cm. long, one-nerved. South. Morocco, Cape. (B.M. 6099, 5945)..... *KL. ANTEUPHORBIUM* (L.) DC.
- b. Infl. with as many as 20 heads, each with 16 to 18 florets; lvs. to 9 cm. long, 3-nerved. (see photo No. 6.) S. Arabia. (Syn. *Kl. anteuphorbium* Hort.)..... *KL. ODORA* (Forsk.) DC.
- 15a. (12b.) Plants Stapelia-like, with erect, angled stems, the angles with prominent spine-like bases of the small, 2 to 5 mm. long lvs. that soon wither; heads solitary, scarlet. South Africa (Fl. Pl. S.A. 28.)..... *KL. STAPELIAEFORMIS* Phill.
- b. Plants otherwise, joints neither angled nor spiny; lvs. fall away clean, to 2 cm. long; heads orange- or blood-red. South Arabia. (B.M. 7695)..... *KL. PENDULA* (Forsk.) DC.

(2 :: *Cacalia* is never succulent.
(*³:: Berger erroneously cites this as 6796.)..... *KL. GRANTII* Hook. f.



Ferocactus tortulospinus: type specimen

Four New Species of Ferocactus from Lower California, Mexico

By HOWARD E. GATES

Photos by Author. Part II.

Ferocactus tortulospinus sp. nov.

Planta solitaria, globosa-subcylindrica, usque ad 6 dm. alta et 4 dm. diametro; costae 20, subtenues, supra rotundae; tubercula obscura; areoleae submagnae, ellipticae, 1 cm. distantes, plantis in veterioribus propinquantes; spineae radiales 3 vel 4 ab utroque lateri areolae (cunctae 6 vel 8), aciculares, patulae, canae; mediae autem 11, rigidae, tenues, maxime diverse, annulatae, patulae vel oppressae, colore hebetes, subcanorubrae, apicibus luteis, omnes rectae, pungentes, praeter inferiorem in medio, quae est tenuis, ad 13 cm. producta, fere hami forma, plerumque tortulosa; flores fructus non observati.

Plants solitary, globose to subcylindric, to 6 dm. high and 4 dm. in diameter; ribs 20, rather thin, rounded above; tubercles indistinct; areoles fairly large, elliptic, 1 cm. apart, becoming approximate in older plants; radial spines 3 or 4 on each side of areole (6 or 8 in all), acicular, spreading, grayish white; central spines 11, stiff, slender, very diverse, annulate, spreading or appressed, dull grayish red with yellow tips, all straight and pungent except the

lower middle one, this slender, elongated to 13 cm., more or less hooked and generally pronounced tortulose; flowers and fruit not observed.

TYPE: Gates No. 161, collected July 24, 1932, on low hills 10 miles north of Laguna Seca Chapala, Baja California ($29^{\circ} 35' N$, $114^{\circ} 40' W$), and deposited in the Dudley Herbarium (No. 207825).

The specific name has been bestowed with reference to the strangely twisted central spine. In form and size *F. tortulospinus* resembles *F. acanthodes* more than any other of the Lower Californian Ferocacti. The distribution of *F. tortulospinus* is not definitely known yet, but is probably limited to a small inland area in the driest part of the peninsula. A few plants are in collections under my collection number. The illustration shows a plant collected at the same time as the type specimen.

Ferocactus coloratus sp. nov.

Planta solitaria, globosa-subcylindrica, usque ad 1 m. alta, 3 dm. diametro; costae plantis junioribus 13, maturis usque ad 20 crescentes numero; tubercula non bene separata; areolae magnae, ovatae-ellipticae, 1.7-2 cm. longae, aequidistantes; spinae radiales 10-14, seti forma, quaque ab parte inferiore aliquando minoribus spinarum medianarum simili, patulae, aliquid cincinnatae, hebeti albo; spinae mediae 9 vel aliquando usque 11 (cum duas spinae radiales bene crescentur), rigidae, robustae, patulae, annulatae, candide subfulvibrubrae, omnes rectae pungentesque praeter inferiorem in medio quae est planata in latitudinem 1 cm., usque ad 5 cm. longa, aliquid supra concavata, plerumque ad basim bifida, porrecta vel aliquid deflectata, extremo recurvata, hamata: spina superior in medio quoque plana sed recta manet; flores luridi, quorum quodque segmentum perianthium linea subrubro-purpurea extra in medio decurrente notatum; fructus non visus.

Plants solitary, globose to sub-cylindric, to 1 m. high and 3 dm. in diameter; ribs 13 on young plants, increasing to 20 on mature specimens; tubercles not very distinct; areoles large, ovate to elliptic, 1.7-2 cm. long and the same distance apart; radial spines 10-14, setiform or the lower one at each side occasionally resembling the smaller of the central spines, spreading and slightly curled, dull white; central spines 9 or sometimes apparently 11 when two radial spines become well developed, stiff, robust, spreading, annulate, bright brownish red, all straight and pungent except the middle lower one: this flattened to 1 cm. wide and becoming 5 cm. long, more or less concave above, frequently bifid to the base, porrect or slightly deflected, the tips recurved and hooked: the upper middle spine is also flattened but remains straight; flowers straw-yellow with a reddish purple stripe down the external surface of each perianth segment; fruit not seen.

TYPE: Gates No. 160, from southwest of Aguaje San Andreas, Baja California (28° 50' N, 114° 10' W), deposited in the Dudley Herbarium of Stanford University (No. 207823). The species is known only from the type locality. The specimen illustrated was collected at the same time and place as the type specimen.

This striking species is characterized by the wide spines and their deep coloration, which is effectively set off by the dark green of the plant body. The frequently bifid lower central spine is also a distinguishing feature. The Mexicans employ the word "colorado" to designate the color of the spines of *F. coloratus*, consequently it seems an appropriate name by which to designate this species. The four central spines are arranged in a definite pattern; of

these, the lower bifid, hooked one is quite prominent, the upper flattened one, which points upward, is not so prominent as the two



Ferocactus coloratus from type locality

subterete, divergent side spines which arise in the areole between the upper and lower ones. The upper and side spines are often tipped a straw-yellow color.

The species is apparently confined to a narrow belt lying between the coastal area and the true desert district just north of Vizcaino Bay. Visitors who have seen the plants growing in my garden have been more interested in this species than in any other from Lower California, on account of the high color of the spines. Specimens are in California gardens under the collection number.

EDITOR'S NOTE: Two more *Ferocacti* will be described by Mr. Gates in the next issue and two new *Neomammillarias* in the April issue. Mr. Gates is leaving for another expedition into Mexico where he hopes to clear up other questionable facts about the cacti that he has studied in their native habitat. Mr. Gates will be glad to correspond with readers who are interested in his plants or his work. Address: 119 So. Illinois St., Anaheim, California.

The strangest Christmas trees were the three *Carnegiea gigantea*'s growing on the lawn in front of the plant of the Arizona Packing Co., manufacturers of Cactus Brand Hams and Bacon, at Phoenix, Ariz. These three giants were decorated with lights during the holiday season.

NOTE: The following 4 pages are the 19th installment of the Britton and Rose reprint of Vol. I, The Cactaceae. Only four pages are reprinted this issue since the following issue will contain one of the plates printed in three colors.

Notes on Britton and Rose

Edited by E. M. BAXTER

The following is taken from page 258 of the Appendix to Vol. IV.

Series 3a. PISCIFORMES.

Plants in dense colonies with turgid, very spiny, narrow, deep green joints, the spines conspicuously long and slender, salmon-colored in the first year, gray in the second; flowers numerous, bright yellow; berry turbinate-obvoid, 4 cm. long or less. The only species inhabits Florida.

96a. *Opuntia pisciformis* Small sp. nov.

Prostrate, copiously branched, forming dense mats often 1 to 3 meters in diameter, with joints piled several layers deep, roots fibrous; joints narrowly elliptic, linear-elliptic, or spatulate, mostly 1 to 3 dm.



FIG. 236.—*Opuntia pisciformis*.

long, very thick, deep green, readily detached; leaves stout-subulate, 2 to 4 mm. long, incurved; areoles rather prominent, mostly armed; spines solitary or 2 or 3 together, cream-colored, becoming salmon-colored and gray with a dark tip when dry, salmon when wet, the longer ones 5 to 6 cm. long; flowers numerous; ovary turbinate, angular and tuberculate; sepals green, the outer lanceolate to triangular-lanceolate, 9 to 12 mm. long, acuminate, the inner much larger, the broad ovate or suborbicular base broadly tapering into the very stout tip; corolla bright yellow, 6 to 7.5 cm. wide; petals about 12, 3 to 4 cm. long, broadly cuneate, mostly truncate or emarginate at apex, mucronate; anthers nearly 2 mm. long; berry broadly turbinate-obvoid, 3.5 to 4 cm. long, purple, narrowed at base, the umbilicus deeply concave; seeds rather numerous, 5 to 5.5 mm. in diameter.

Sand dunes, estuary of the Saint Johns River, Florida. Type in the herbarium of the New York Botanical Garden; collected on dunes at Atlantic Beach, Florida, in April 1921, by J. K. Small.

Figure 236 is from a photograph by Dr. Small of the type plant.

A YOUNG BOTANIST

For Yale Dawson, 14, Christmas vacation meant an opportunity to go to Mexico to gather rare cacti to add to the 540 specimens he already has in the garden at the home of his parents, Mr. and Mrs. E. C. Dawson, 2924 East Fifth Street.

One of the plants which Yale recently added to his collection is a night-blooming cereus from Sonora. Cylindrical in shape, it has rows of white spines arranged in clusters, with the longer spines at the top growing until they resemble hair. Because of his scientific interest in his plants, Yale has been able to obtain a Government permit to import cacti. He intends to study to be a botanist when he enters Wilson High next semester.

Six or seven rare types of cacti not usually found in the United States were discovered by Yale this side of the border. He values some of the specimens at \$65. Other recent additions to his garden are barrel cacti, *lemaireiocereus thurberi*, Ajo, Ariz.; yellow cacti with spines all the way up their sides, Lower California, and *astrophytum myriostigma*, from the mountains on the east coast of Mexico.

Among his succulents are the agave *ferox*, a specimen of which he values at about \$8, and the African elephant-bush, which in its native habitat is one of the delicacies of the elephant's diet. He has planted a number of succulents in one shaded bed and has arranged soil in various spots in the garden to suit the kind of cacti planted there. In one bed he has eighty-five varieties, all of the round type.

Yale's cactus garden has grown so that there is little lawn left at the back of his house. Shelves in the room adjoining the garage where he experiments with his plants are crammed with boxes and trays of seedlings, cacti on which he is experimenting with grafts, and other plants that need special care.

"Here's my youngest," he says, as he shows a coffee can in which are tiny green shoots. Even though they are only six weeks old, the tiny spines already mark them as cacti.

EDITOR'S NOTE: A worthy ambition for a boy and may other young men join him in his work with plant life.

CATALOGUES RECEIVED

Curt Backeberg, Volksdorf (Bez. Hamburg) Germany. Cactus and Succulent Seed price list 1933. 16 pages with illustrations (free).

Mrs. A. F. Moeller, Ave. Rayon No. 603, San Pedro, Coah., Mexico. Price list of rare Mexican cactus seeds. 4 pages (free).

Albert Schenkel, Hamburg 1, Germany. Seed catalogue. 32 pages, illustrated (free).

H. Winter, Frankfurt am Main, Fehrenheim, Germany. Seed catalogue, 20 pages, well illustrated (free).

CACTUS CULTURE

This is the most up-to-date, practical and comprehensive book published on the culture of Cacti. The most experienced as well as the beginner will find in this book suggestions which will prove both profitable and interesting. 186 pages 5 1/2 x 8 with fabrikoid binding. Price \$2.00. Cactus & Succulent Society of America, 1800 Marengo St., Los Angeles, Calif.

LETTER FROM CZECHOSLOVAKIA*

Your letter, also a issue of your Journal I have with best thanks received, I hope also that you have received our issues of *Kaktusarske Listy*. We have send you all issues of this year, you will be so kindly and send us also all issues to this time sent out.

You are interested to hear more about our Society. At first I beg your pardon for my very rough English, and if you will make use of this letter to the purpose of your Journal, you certainly will be so kindly to make arrangement of this in good English.

It is perhaps astonishing to hear, that in so little Country as the Czechoslovakia, is also a Cactus Society, and that has started before others great Country in this branch. But the Czechoslovakia is from the old times a country where the love for Cacti and others plant is developed. We have had for 50 or more years great collectors of Cacti, for example the famous Seitz, Dr. Schoebel a. o. Seitz named one variety of *Cereus chiloensis* to the name of our native *Herlos Zizka*, the famous warrior of Hus-Warr: *Cereus chiloensis Zizkaana*—it is therefore no Author-name as Schumann and others supposed.

The name of *Cereus Roezl* remind the name of our great Orchid and Cactus hunter, Benedik Roezl. Roezl travelled many years in South America, also in Mexico, Arizona, Texas, and he is the finder of *Pilocereus Dauwitzii* and other old Cacti. In the old time was in Prag famous the garden of Prince Salm-Dyck, with a great collection of Cacti and others Succulents. After the World War the love for Cacti is stamping through and in the year 1922 was founded our Society. The name, "Spolek pestitelu kaktusu v R C S." is in English: Society of Cactus-Growers in Republic Czechoslovakia, but he associated not only the commercial, but more the amateurs. The last card of legitimation has the Nr. 646. Our Journal, named "*Kaktusarske Listy*," that is in English: Journal for lover of Cacti, issued monthly from 1925 and is for Members free.

OSKAR SMRZ.

*EDITOR'S NOTE: It is such a pleasure to hear from our distant friends that this letter would be un-natural if it were edited. Best wishes for their excellent and faithful endeavor.—S. E. H.

IT PAYS TO ADVERTISE

I feel that I owe it to the magazines in which I advertise to testify to the expediency of the same. Two things I have proven. One is that even if the current ad does not bring in enough returns to justify the expense in the long run it pays in dollars and cents and in interesting communications from the rest of the world. My customers who have children collecting stamps find in me a stamp mine.

The other thing I have discovered is that a catalogue does pay but only if you advertise. A year ago I put out my first catalogue, a crude affair but my own and what a struggle it predicated. I got one order from it that paid the entire cost. When I put forth my new one this year, still crude but suffering equally much in purturbation I had 150 requests for it. I feel now that I can recommend advertising in the Cactus and Succulent Journal as a means to better business. However, I must say I consider it effective only if it is continuous. Desultory, occasional attempts may prove disappointing but persistent advertising in a magazine devoted to one's specialty pays.

NEFF BAKERS.
Knickerbocker Nursery, San Diego.

Cow feeding on *Opuntia*. Desert near Tucson, Arizona.

An Answer to "Water! Water! Everywhere!"

Mr. G. A. Frick's depreciation of the value of our southwestern visnagas to thirsty travelers opens a discussion of the value of the various opuntias as a water supply to animals. Greatly to my surprise, I find that Mr. Frick as well as a great many other Californians are under the impression that a diet of our local cholla is fatal to our native range stock. It has been stated there are two major dangers resulting from such a diet. First, that the spines cause sore mouths forcing the cattle into such a prolonged fast they eventually starve. Second, surviving the first, they may anticipate death from perforated intestines.

More than ten years of my thirteen in the southwest were spent in Southern Sonora; ample time and excellent country for me to have made first hand observations.

Between Cajeme, Sonora and the Gulf of Lower California lies a region that is arid during nine months of the year. Patches of salt grass, a few mesquite trees, clusters of a green reed and large quantities of cactus of all species spot the country. I have crossed this plain many times on hunting and fishing expeditions to the coast and on many occasions have observed cattle and deer feasting on cholla. Not only have I made this observation during the dry season but also when there was water available nearby, and never have I heard of stock dying because of the spines.

So emphatic was Mr. Frick in his belief that I began a systematic check-up among the many cattle men of Arizona and Sonora, receiving only vigorous denials of any casualties among cattle from a cholla diet. Indeed, my very question incited broad grins and at times raucous laughter. The question of food values followed with a wide divergence of opinions which I shall not contend with here. But I did ascertain that once a cow acquires the cholla eating habit she cannot be broken of it.

To quote all of the replies to my inquiry would

be a useless repetition of denials. Typical of them is the following from S. H. Parsons, fellow member, who lived many years in the Kino Bay country of Sonora.

"My own cattle in Sonora would come in with their mouths and muzzles covered with joints of the cactus and the spines. I have noticed that in a day or so, if the cattle are kept in the corral, the joints drop off without any apparent harm. We have slaughtered many cattle but never found cholla spines having injured them internally. Another thing, even the milk cows that are fed every day in the corrals, when allowed to go out where the cholla is abundant, eat the joints because they like them, not because they are starving. I did not know that anyone familiar with our southwest did not know that cattle as well as many wild animals, eat cholla."

If any of the readers have neglected the works of Carl Lumholtz, let them go to their library and get a copy of his "NEW TRAILS IN MEXICO" wherein he gives an excellent description on page 151 of the antics of a cow eating cholla.

The question has come up whether or not range stock is slaughtered before any harmful effects of the spines would show up. Steers are ordinarily slaughtered in the third or fourth year, so to eliminate any possibility of exception being taken to my statements, I specifically confined my inquiries to the range cow, as they live until their reproducing usefulness has passed, between fifteen and twenty-five years.

In summing up, the general concensus of opinion is that the spines that for a day or so cling to their mouths and muzzles are eliminated by suppuration or absorption. The spines that are swallowed are so well crushed and ground by chewing that the action of the gastric juices disposes of their viscousness, thus preventing intestinal perforation.

JAMES MANSON.

Transplanting *Pachycereus marginatus* One Hour From Site to Site

By JACOLYN MANNING

In a garden facing on Carmelita Park, Pasadena, we found, for sale, last summer, a three-columned fifteen-foot *Pachycereus marginatus*. Grown from a cutting brought from Riverside, California, in 1912, it was twenty years old, and a perfect specimen, with an estimated weight of four hundred pounds. We purchased this lucky find.



Photo by Hurley

Pachycereus marginatus fifteen feet high transplanted to the author's garden.

An amateur member of the Cactus Society experienced in work in his own desert garden consented to remove this fine plant to its new home three miles away.

The ground at the new site, the corner of an adobe study, was carefully prepared. A considerable excavation was lined with broken rock, charcoal, lime and sandy loam; several barrow loads of sand, garden loam, peat and goat manure were placed conveniently nearby.

On an August evening with helper, tools and trailer, we motored to the yard on the north border

of Carmelita Park. Detaching the trailer it was pushed in and dropped with its long tongue pointing upward, in front of the giant cactus.

A deep but narrow trench was then dug around three sides of the plant, and it was gently encouraged to loosen its north hold on the house foundations against which it stood.

There was one calamitous moment when the huge triple column swayed to the east, and toppled over! Fortunately a tangle of stout grape vines eased and several hearts resumed normal contractions.

Placing the rear edge of trailer close to the sprawling roots, and with the use of guy ropes, the great plant was gently urged to recline against its sloping floor which had been heavily bedded with old comfortables. The large mass of roots was bagged in burlap and tarpaulin. Marginatus, with her triple tips paralleling the tongue, was securely lashed to the trailer, and hauled out to the waiting automobile.

The trailer and its load made a long and awkward cargo for turning corners and avoiding traffic in crossing the city, but with red side and tail lights, and careful driving, the maneuver was successfully negotiated.

Arriving at the new home the trailer was again detached and hauled to far end of garden and the prepared excavation, where a reversal of method placed this Sacred Cactus of the Toltecs upright in his new throne.

The roots were straightened out so far as possible, several barrow loads of soil thrown on, and a heavy irrigation given to settle the soil. The excavation was filled, dirt tramped down, and large rocks from Death Valley placed for support at base.

Next to the last act was guying the young giant to the adjacent adobe wall, with heavy wire encased in inner tubing; then all hands partook of much needed refreshment, and the good will of the gods of the Toltecs was solicited with a libation.

The Fifth Annual Show of the Cactus and Succulent Society of America will be held in May, this year. The Show Committee is working overtime on this and we hope to soon announce the dates and place in which the show will be held. In view of the fine winter weather and the condition of our members' plants and gardens, the Show promises to be even finer than any previous one.

A member living in Pittsburgh writes to inquire whether the genus *Rhipsalis* which is composed of 57 species includes the pickle. No, the member's name is not Heintz.

The *Agave*, commonly called the "Century Plant", was so named because it was supposed to flower only when 100 years old and then die. The number of years required for the *Agave* to flower is from 5 to 50, depending on the richness of the soil and mildness of the climate. Cultivated plants usually flower in about 10 years.

The Cactus & Succulent Society of Great Britain will hold their first Cactus and Succulent exhibition some time in June of this year. This society now has a membership of 280 and publish their own magazine.

What Grows Where

Cacti Listed in Accordance With Their Geographical Origin*

Compiled and Copyrighted for Mrs. John D. Wright, Santa Barbara, Calif., 1933

By ANNE SMITH

Part II

ARIZONA (Continued)

SUBGENUS 3. PLATYOPUNTIA

Basilares

O. basilaris

TYPE LOCALITY: From Cactus Pass down the valley of the Bill Williams River.

DISTRIBUTION: Northern Sonora, western Arizona, southern California, Nevada, and southern Utah.

Tortispinae

O. plumbea

TYPE LOCALITY: San Carlos Indian Reservation, Arizona.

DISTRIBUTION: Arizona.

O. stenochila

TYPE LOCALITY: Canyon of Zuni, New Mexico.

DISTRIBUTION: Western New Mexico and Arizona.

O. delicata

TYPE LOCALITY: Calabasas, Arizona.

DISTRIBUTION: Southeastern Arizona.

Phaeacanthae

O. macrocentra

TYPE LOCALITY: Sand hills on the Rio Grande near El Paso, Texas.

DISTRIBUTION: Western Texas to eastern Arizona and Chihuahua, Mexico.

O. santa-rita

TYPE LOCALITY: Selero Mountains, Arizona.

DISTRIBUTION: Southeastern Arizona.

O. angustata

TYPE LOCALITY: Bottoms, Bill Williams Fork, Arizona.

DISTRIBUTION: Recorded as extending from New Mexico to California, but known definitely to us only from central Arizona, perhaps extending north to Utah.

O. phaeacantha

TYPE LOCALITY: About Santa Fe and on the Rio Grande, New Mexico.

DISTRIBUTION: Texas to Arizona and Chihuahua, Mexico.

O. caesia (Griffiths—Proc. Biol. Soc. Washington, 29, p. 13, 1916).

TYPE LOCALITY: Between Crozier and Hackberry, Arizona.

DISTRIBUTION: Not cited.

O. eocarpa (Griffiths—Gr. New Spec. of Op.—Proc. Biol. Soc. Wash. 29, p. 11, 1916)

TYPE LOCALITY: Near Pantano, Arizona.

DISTRIBUTION: In the foothills of Rellito and Santa Cruz Valleys of Arizona.

O. microcarpa (Griffiths—Griff. Add. spec. of Op. Bull. Torr. Club 43, p. 527).

TYPE LOCALITY: Near Solomonville, Arizona.

DISTRIBUTION: Southern Arizona.

O. recurvispina (Griffiths—Griff. New Spec. of Op.—Proc. Biol. Soc. Wash. 29, p. 12, 1916).

TYPE LOCALITY: Near Pantano, Arizona.

DISTRIBUTION: Foothill regions of Rellito and Santa Cruz Valleys of southern Arizona.

O. superbispina (Griffiths—Griff. New Spec. of Op.—Proc. Biol. Soc. Wash. 29, p. 13, 1916).

TYPE LOCALITY: 15 miles southeast of Kingman, Arizona.

DISTRIBUTION: In general region around Kingman, Arizona.

*Unless otherwise stated the specimens mentioned have been described in The Cactaceae by Britton and Rose.

O. vaseyi

TYPE LOCALITY: Cited as Yuma, Arizona, presumably erroneously.

DISTRIBUTION: San Bernardino and Orange Counties, southern California.

O. engelmannii

TYPE LOCALITY: From El Paso to Chihuahua, Mexico.

DISTRIBUTION: Chihuahua, Durango, Sonora, Mexico, Arizona, New Mexico, and Texas.

O. arizonica (Griffiths—Ill. Stud. in the Genus *Opuntia* 11, Missouri Bot. Garden, p. 93).

TYPE LOCALITY: Near Kirkland, Arizona.

DISTRIBUTION: Not cited.

O. magnarenensis (Griffiths—Griff. New Spec. of Op. Proc. Biol. Soc. Wash. 29, p. 9, 1916)

TYPE LOCALITY: Near Owens Post Office, Arizona.

DISTRIBUTION: Common on the Big Sandy, 30-50 miles, south of Kingman, Arizona.

O. discata

TYPE LOCALITY: Foothills of Santa Rita Mountains, Arizona.

DISTRIBUTION: Foothills and high mesas of southern Arizona and northern Sonora, Mexico.

O. gilvescens (Griffiths—Gr. Ill. Stud. in the Genus *Opuntia* 11, Missouri Bot. Garden, p. 87).

TYPE LOCALITY: In foothills of Santa Rita Mountains, Arizona.

DISTRIBUTION: Not cited.

Dillenianae*O. chlorotica*

TYPE LOCALITY: On both sides of the Colorado from San Francisco Mountains, Arizona, to headwaters of Bill Williams River.

DISTRIBUTION: Sonora and New Mexico to Nevada, California, Lower California, Arizona.

O. curvospina (Griffiths—Bull. Torr. Club 43, p. 88., 1916).

TYPE LOCALITY: Between Nipton, California and Searchlight, Nevada.

DISTRIBUTION: Widely distributed in Cal., Nev. and Arizona Desert.

O. laevis

TYPE LOCALITY: In Arizona.

DISTRIBUTION: In the mountains about Tucson, Arizona.

O. procumbens

TYPE LOCALITY: San Francisco Mountains to Cactus Pass, Arizona.

DISTRIBUTION: Northern Arizona.

O. canada

TYPE LOCALITY: Foothills of the Santa Rita Mountains, Arizona.

DISTRIBUTION: Southeastern Arizona.

Polyacantheae*O. fragilis*

TYPE LOCALITY: From the Mandans to the mountains, in sterile but moist situations.

DISTRIBUTION: Wisconsin to central Kansas and northwestern Texas, westward to Arizona, Oregon, Washington, and British Columbia.

O. erinacea

TYPE LOCALITY: On Mojave Creek, California.

DISTRIBUTION: Northwestern Arizona, southern Utah, southern Nevada, and eastern California.

O. hystricina

TYPE LOCALITY: Colorado Chiquito and on San Francisco Mountains.

DISTRIBUTION: New Mexico to Arizona and Nevada.

Polyacantha*O. xerocarpa* (Griffiths—New Spec. of Op.—Proc. Biol. Soc. Wash. 29, p. 15, 1916).

TYPE LOCALITY: 15 miles southeast of Kingman, Arizona.

DISTRIBUTION: Western slope of San Francisco highlands, Arizona.

O. polyacantha

TYPE LOCALITY: Arid situations on the plains of the Missouri.

DISTRIBUTION: North Dakota to Nebraska, Texas, and Arizona to Utah, Washington, and Alberta, Canada.

CEREEAE

SUBTRIBE CEREANAE

*Lemaireocereus**L. thurberi*

TYPE LOCALITY: Canyon near the mountain pass of Bachuachi, Sonora, Mexico.

DISTRIBUTION: Southern Arizona, in the Comobabi, Quijotoa, and Ajo Mount. throughout western Sonora, and on both coasts of Lower California.

*Peniocereus**P. greggii*

TYPE LOCALITY: Near Chihuahua, Mexico.

DISTRIBUTION: Western Texas, southern New Mexico and Arizona to Sonora, Chihuahua, and Zacatecas.

*Carnegiea**C. gigantea*

TYPE LOCALITY: Along the Gila River, Arizona.

DISTRIBUTION: Arizona, southeastern California, and Sonora, Mexico.

*Lophocereus**L. schottii*

TYPE LOCALITY: In Sonora, toward Magdalena, Mexico.

DISTRIBUTION: Southern Arizona, Sonora, and Lower California.

SUBTRIBE 3. ECHINOCEREANAE

*Echinocereus**E. mojavensis*

TYPE LOCALITY: On the Mojave River in California.

DISTRIBUTION: Southeastern California to Nevada and Utah, western Arizona, and reported from northwestern Mexico.

E. coccineus

TYPE LOCALITY: About Santa Fe, New Mexico.

DISTRIBUTION: New Mexico and Arizona to Utah and Colorado.

E. rigidissimus

TYPE LOCALITY: Sonora.

DISTRIBUTION: Southeastern Arizona and northern Sonora.

E. fendleri

TYPE LOCALITY: Near Santa Fe, New Mexico.

DISTRIBUTION: Texas to Utah, Arizona, and northern Sonora and Chihuahua, Mexico.

E. engelmannii

TYPE LOCALITY: Mountains about San Felipe, southern California.

DISTRIBUTION: California, Nevada, Utah, Arizona, Sonora, and Lower California.

E. polyacanthus

TYPE LOCALITY: Cosihuiriachi, Chihuahua.

DISTRIBUTION: Chihuahua and Durango, Mexico, to western New Mexico and southeastern Arizona.

Echinocereus sp.

TYPE LOCALITY: Not cited.

DISTRIBUTION: Collected in the Quijotoa Mountains, Arizona.

SUBTRIBE 4. ECHINOCACTANAE

*Ferocactus**E. bertrichii* (Desert Magazine, Aug. 1929, p. 40)

TYPE LOCALITY: Not cited.

DISTRIBUTION: Tortilla and Gila mountains, Arizona.

F. wislizeni

TYPE LOCALITY: Donana, New Mexico.

DISTRIBUTION: El Paso, Texas, west through southern New Mexico and Chihuahua to Arizona and Sonora and perhaps south along the Gulf of Calif. into Sinaloa. Reported also from Utah, perhaps erroneously, and from Lower California.

(To be continued)

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An International Society for all lovers of Xerophytes
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